

4,663,644); and Claims 5, 8, 10, 12, and 16 were rejected under 35 U.S.C. § 103(a) as unpatentable over Shimizu.

With regard to the rejection of Claims 3-20 as unpatentable over Shimizu, this response addresses the 35 U.S.C. § 102(b) and 35 U.S.C. § 103(a) rejections concurrently. Independent Claims 3, 4, and 11 recite that “the source regions are connected to each other at one end of the first gate electrode group, and separated from each other at the other end of the first gate electrode group.” Because the source regions are connected to each other at one end and separated from each other at the other end, it is possible to increase channel density, thereby making it possible to achieve low device resistance for the semiconductor device.¹

Shimizu relates to a semiconductor device having a vertical type MOSFET. Shimizu describes that the source and drain regions are formed when forming the silicon body, thereby enabling control of the impurity concentrations of the regions and the channel length.² However, Shimizu does not disclose or suggest that “the source regions are connected to each other at one end of the first gate electrode group, and separated from each other at the other end of the first gate electrode group.”

Additionally, the claimed configuration would not have been obvious from the disclosure of Shimizu because Shimizu in no way discloses or suggests that connecting the source regions at one end of a gate electrode group while separating the source regions at the other end of the gate electrode group would improve the characteristics of the semiconductor device. In fact, Shimizu describes “source and drain regions are formed in the vertical direction within a silicon body . . . and a gate electrode is disposed by the side of the source and drain through an insulator film so

¹ Specification, page 5, lines 4-8.

² Shimizu, col. 10, lines 38-40.

as to stride over them.”³ Because Shimizu describes that the gate electrode “strides” over the source and drain, Shimizu impliedly teaches away from the claimed limitations. Specifically, Applicant respectfully submits that the description of Shimizu teaches away from the claimed limitation, that “the source regions are connected to each other at one end of the first gate electrode group, and separated from each other at the other end of the first gate electrode group.”

Accordingly, as Shimizu fails to disclose or suggest the limitations recited in pending independent Claims 3, 4, and 11, Applicant respectfully submits that pending independent Claims 3, 4, and 11 patentably distinguish over Shimizu. Likewise, dependent Claims 5-10 and 12-20 are considered to patentably distinguish over Shimizu for at least the reasons above-noted with respect to Claims 3, 4, and 11, from which these claims respectively depend.

Consequently, in view of the present amendments and following discussion, Applicant respectfully submits that the pending application is in condition for immediate allowance. An early and favorable action is therefore respectfully requested.

Respectfully submitted,

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³ Id. col. 9, lines 49-53.

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IN THE CLAIMS

Claims 1, 2, and 21 (canceled).